

Nonresponsive

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THE DRAWINGS INCLUDED WITH THIS PACKET ARE FOR USE BY THE FACILITY NAMED ABOVE. THE DRAWINGS MAY NOT BE USED FOR ANY PURPOSE AT ANY OTHER FACILITY. NO REVISIONS, ADDITIONS OR MODIFICATIONS TO THESE DRAWINGS MAY OCCUR WITHOUT WRITTEN CONSENT AND PERMISSION FROM THE LICENSED PROJECT ENGINEER OF THE COMPANY LISTED IN THE TITLE BLOCK.

IT IS INTENDED THAT ALL PLANS CONFORM TO MWPS-36 OR TR-9 AS APPROPRIATE.  
IN ADDITION ANY CONSTRUCTION OUTSIDE THE PERVUE OF THIS DOCUMENT SHALL CONFORM TO THE APPROPRIATE ACI CODE.





1.) CONTACT JULIE (JOINT UTILITY LOCATING FOR EXCAVATORS) BEFORE BEGINNING ANY EXCAVATION OF SOIL FOR PROJECT (PH 811).

- 1.) SCHEDULE DELIVERY TO MINIMIZE LONG TERM STORAGE AT JOB SITE.
- 2.) STORE BUNDLES ABOVE GROUND ON TIMBERS OR OTHER CRIBBING.
- 3.) SPACE SUPPORT CRIBBING CLOSE ENOUGH TOGETHER TO PREVENT EXCESSIVE SAGGING OF THE BUNDLES.
- 4.) BLOCK MATERIAL AND STORE ON A SLANT TO ALLOW FOR WATER DRAINAGE AND AIR FLOW.
- 5.) CONTRACTOR SHALL CONFIRM THAT ALL STEEL REINFORCEMENT DOCUMENTATION MEETS PROJECT REQUIREMENTS.

- 1.) ALL ORGANIC TOPSOIL INSIDE THE CONSTRUCTION AREA AND AT SITE FILL AREAS SHALL BE REMOVED. CONTRACTOR SHALL VERIFY TOPSOIL DEPTHS PRIOR TO CONSTRUCTION PER THE GENERAL CONDITIONS.
- 2.) TOPSOIL SHALL BE STRIPPED FROM THE FOUNDATION AREA AND STOCKPILED FOR USE AS TOP DRESSING FOR VEGETATION ESTABLISHMENT UNLESS OTHERWISE SHOWN ON THE DRAWINGS.
- 3.) PROOF ROLL SUBGRADES BELOW FLOOR, BEFORE FILLING OR PLACING AGGREGATE COURSES, WITH HEAVY PNEUMATIC-TIRED EQUIPMENT, SUCH AS A FULLY LOADED TANDEM AXLE DUMP TRUCK, TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. DO NOT PROOF ROLL WET OR SATURATED SUBGRADES.
- 4.) AGGREGATE BEDDING SUBGRADE SHALL BE PLACED TO A THICKNESS OF 3 TO 6 INCHES, AS NECESSARY, TO LEVEL THE FOUNDATION EXCAVATION TO FINISHED GRADE.
- 5.) RECONSTRUCT SUBGRADES DAMAGED BY FREEZING TEMPERATURES, FROST, RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES.
- 6.) WHEN SUBSURFACE DRAINS ARE ENCOUNTERED DURING ANY EXCAVATION, THEY SHALL BE REMOVED TO A MINIMUM DISTANCE OF 50' AWAY FROM EXTERIOR HORIZONTAL EXTENT OR EXTERIOR BERM TOE OF ANY WASTE STORAGE STRUCTURE AND REROUTED AROUND THE FACILITY.

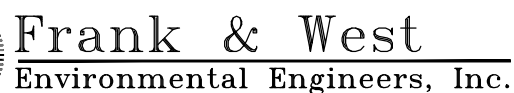
- 1.) FILL SHALL NOT BE PLACED UNTIL THE REQUIRED EXCAVATION AND PREPARATION OF THE UNDERLYING FOUNDATION IS COMPLETED AND APPROVED BY THE TESTING AND INSPECTION AGENCY. FILL SHALL BE PLACED BEGINNING AT THE LOWEST ELEVATION OF THE FOUNDATION. NO FILL SHALL BE PLACED ON A FROZEN SURFACE.
- 2.) IF THE SURFACE OF ANY LAYER BECOMES TOO HARD AND SMOOTH FOR PROPER BOND WITH THE SUCCEEDING LAYER, IT SHALL BE SCARIFIED PARALLEL TO THE AXIS OF THE FILL TO A DEPTH NOT LESS THAN 2 INCHES BEFORE THE NEXT LAYER IS PLACED.
- 3.) ALL FILL UNDER CONSTRUCTION AREAS SHALL BE PIT RUN GRAVEL, OR APPROVED ENGINEERED GRANULAR MATERIAL, PLACED IN 8" MAXIMUM LIFTS, AND COMPACTED TO AT LEAST 95% OF STANDARD PROCTOR MAXIMUM DENSITY. GRAVEL BASE BENEATH ALL CONCRETE SLABS SHALL BE 6" OF CLEAN SAND OR 3/4" CURED STONE WITH FINES COMPACTED. FILL MAY NOT BE PLACED ON FROZEN GROUND AND NO FROZEN MATERIALS MAY BE USED AS BACK FILL.
- 4.) EXCAVATION CONTRACTOR MAY HIRE SOIL TESTING FIRM AND ALLOW TESTING OF SUBGRADES AND EACH FILL LAYER. PROVIDE (1) TEST FOR EVERY 2,500 SQ. FEET OF SUBGRADE AREA AND ONE TEST FOR EVERY 100 LINEAR FEET OF WALL FOOTING. PROCEED WITH SUBSEQUENT EARTHWORK ONLY AFTER TEST RESULTS PREVIOUSLY COMPLETED WORK COMPLY WITH COMPACTION REQUIREMENTS.

- 1.) ALL ORGANIC TOPSOIL INSIDE THE CONSTRUCTION AREA AND AT SITE FILL AREAS SHALL BE REMOVED. CONTRACTOR SHALL VERIFY TOPSOIL DEPTHS PRIOR TO CONSTRUCTION PER THE GENERAL CONDITIONS.
- 2.) ALL ORGANIC TOPSOIL SHALL BE STRIPPED FROM CONSTRUCTION AREA AND STOCKPILED FOR USE AS TOP DRESSING FOR FINISHED AREAS OUTSIDE OF THE PROPOSED COMPACTED CLAY LINER.
- 3.) CONSTRUCTED CLAY LINER THICKNESS SHALL BE AS FOLLOWS FROM NRCS CPS 520:
  - A. FOR DESIGN STORAGE DEPTH  $\leq 16'$ ; THE LINER THICKNESS SHALL BE 12"
  - B. FOR DESIGN STORAGE DEPTH 16'-24'; THE LINER THICKNESS SHALL BE 18"
  - C. FOR DESIGN STORAGE DEPTH 24.1-30'; THE LINER THICKNESS SHALL BE 24"
- 4.) INSITU CLAY LINER THICKNESS SHALL BE AT LEAST 2 FEET OF NATURAL SOIL BELOW THE BOTTOM AND SIDES OF THE PROPOSED STRUCTURE. AWMFH PART 651 APPENDIX 10D
- 5.) INSITU CLAY LINER THICKNESS SHALL BE AT LEAST 2 FEET OF NATURAL SOIL BELOW THE BOTTOM AND SIDES OF THE PROPOSED STRUCTURE. AWMFH PART 651 APPENDIX 10D
- 6.) CONSTRUCTION OF A COMPACTED CLAY LINER SHALL BEGIN WITH PLACING LOOSE LIFTS IN THICKNESS OF A MAXIMUM OF 9 INCHES AS IS COMMONLY USED BY NRCS SPECIFICATIONS.

- 7.) ONCE CONSTRUCTION OF THE LINER HAS REACHED THE DESIRED THICKNESS, A SAMPLE FOR LABORATORY TESTING OF COMPACTED AND/OR INSITU CLAY LINER WILL BE OBTAINED BY PROJECT ENGINEER OF THE COMPANY LISTED IN THE TITLE BLOCK OF THIS PAGE. THE SAMPLE WILL BE COLLECTED UTILIZING A SHELBY TUBE TYPE OF SAMPLE CONTAINER. THE SHELBY TUBE CAN BE PLACED DIRECTLY IN A FLEXIBLE WALL PERMEAMETER FOR TESTING, AFTER EXTRUSION IN THE LABORATORY. THIS TESTING IS AN APPROVED METHOD WITHIN AWMFH PART 651 APPENDIX 10D.
- 8.) LINER PERMEABILITY SHALL BE AS FOLLOWS FROM IL 35 IAC CODE 506.304 & 35 IAC CODE 506.307
- A. FOR EARTHEN STORAGES THAT COME INTO CONTACT WITH LIQUID WASTE SHALL HAVE A HYDRAULIC CONDUCTIVITY OF EQUAL TO OR LESS THAN  $1 \times 10^{-7}$  CM/SEC.
  - B. FOR EARTHEN STORAGES THAT COME INTO CONTACT WITH POULTRY WASTE IN A DRY OR SOLID FORM SHALL HAVE A HYDRAULIC CONDUCTIVITY OF EQUAL TO OR LESS THAN  $1 \times 10^{-6}$  CM/SEC.
  - C. THE EARTHEN FLOOR OF ENCLOSED DEEP BEDDED LIVESTOCK SYSTEMS THAT HANDLE WASTE IN A DRY OR SOLID FORM SHALL HAVE A HYDRAULIC CONDUCTIVITY OF EQUAL TO OR LESS THAN  $1 \times 10^{-6}$  CM/SEC

- 1.) PRIOR TO THE PLACEMENT OF CONCRETE, THE FORMS AND SUBGRADE SHALL BE FREE OF CHIPS, SAWDUST, DEBRIS, WATER, ICE, SNOW, EXTRANEOUS, OIL, MORTAR, OR OTHER HARMFUL SUBSTANCES OR COATINGS. ANY OIL IN THE REINFORCING STEEL OR OTHER SURFACES REQUIRED TO BE BONDED TO THE CONCRETE SHALL BE REMOVED. ROCK SURFACES SHALL BE CLEANED BY AIR-WATER CUTTING, WET SANDBLASTING, OR WIRE BRUSH SCRUBBING AS NECESSARY.
- 2.) THE SITE SHALL BE GRADED TO THE DIMENSIONS AND ELEVATIONS AS SPECIFIED IN THE CONSTRUCTION PLANS.
- 3.) ALL SURFACES SHALL BE FIRM AND DAMP PRIOR TO PLACING CONCRETE. CONCRETE SHALL NOT BE PLACED IN THE MUD, DRIED EARTH, UNCOMPACTED FILL OR FROZEN SUBGRADE OR IN STANDING WATER. THE USE OF PLASTIC SHEETING TO ISOLATE THE CONCRETE FROM UNSUITABLE FOUNDATIONS WILL NOT BE PERMITTED.
- 4.) THE FORMS AND ASSOCIATED FALSE-WORK SHALL BE SUBSTANTIAL AND UNYIELDING AND SHALL BE CONSTRUCTED SO THAT THE FINISHED CONCRETE WILL CONFORM TO THE SPECIFIED DIMENSIONS AND CONTOURS. METAL CHAIRS, FORMS SHALL BE MORTAR TIGHT. FORMS WITH TORN SURFACES, WORN EDGES, DENTS OR OTHER DEFECTS WILL NOT BE USED. FORMS SHALL BE COATED WITH A FORM RELEASE AGENT BEFORE BEING SET INTO PLACE. EXCESS FORM COATING MATERIAL SHALL NOT COME IN CONTACT WITH THE STEEL REINFORCEMENT OR WITH HARDENED CONCRETE AGAINST WHICH FRESH CONCRETE IS TO BE PLACED.
- 5.) REINFORCEMENT SHALL BE ACCURATELY PLACED AS SHOWN ON THE DRAWINGS AND SECURED IN POSITION IN A MANNER THAT WILL PREVENT ITS DISPLACEMENT DURING THE PLACEMENT OF CONCRETE. METAL CHAIRS, METAL HANGERS, METAL SPACERS, PLASTIC CHAIRS, OR CONCRETE CHAIRS SHALL BE USED TO SUPPORT THE REINFORCEMENT. PRECAST CONCRETE CHAIRS SHALL BE MANUFACTURED FROM CONCRETE EQUAL IN QUALITY TO THE CONCRETE BEING PLACED. PRECAST CONCRETE CHAIRS SHALL BE MOIST AT THE TIME CONCRETE IS PLACED.
- 6.) REINFORCEMENT FOR FLATWORK SHALL BE BY A MINIMUM OF 1 SUPPORT EVERY THIRD BAR OR EVERY 4 FEET IN EACH DIRECTION, WHICHEVER SPACING IS SMALLER. SUPPORT CHAIRS SHALL HAVE A MINIMUM BASE AREA OF 4 SQUARE INCH IN CONTACT WITH THE SUB GRADE.
- 7.) STEEL TYING AND FORM CONSTRUCTION ADJACENT TO NEW CONCRETE SHALL NOT BE STARTED UNTIL CONCRETE HAS CURED FOR AT LEAST 12 HOURS.
- 8.) CONCRETE JOINTS SHALL BE OF THE TYPE SHOWN ON THE CONSTRUCTION DRAWINGS.
- 9.) WATERSTOPS SHALL BE LOCATED AS SHOWN ON THE DRAWINGS AND SECURED IN POSITION SO THAT DISPLACEMENT DOES NOT OCCUR DURING CONCRETE PLACEMENT. WATERSTOPS MAY BE SECURED TO REINFORCEMENT USING WIRE OR "HOG RING" TYPE FASTENERS.

- 1.) DRILL HOLE IN CONCRETE NO MORE THAN  $\frac{1}{2}$  THE THICKNESS OF THE SLAB OR WALL BEING PREPPED.
- 2.) DRILL HOLE  $\frac{1}{4}$ " LARGER THAN REBAR TO BE INSTALLED.
- 3.) CLEAN HOLE BY BLOWING COMPRESSED AIR INTO HOLE TO REMOVE ALL LOOSE PARTICLES.
- 4.) HOLE MUST BE FREE OF WATER
- 5.) THE EPOXY MUST HAVE A PULLOUT STRENGTH GREATER THAN 5,000 LBS.
- 6.) THE EPOXY MUST BE CHEMICALLY RESISTANT TO LIVESTOCK MANURE.
- 7.) USE EPOXY APPROVED BY PROJECT ENGINEER OF THE COMPANY IN THE TITLE BLOCK OF THIS DRAWING.
- 8.) ANY BOLT OR ANY OTHER ANCHORING TYPE DEVICES SHALL BE TIED TO STRUCTURAL STEEL AT THE DEPTH RECOMENDED BY THE MANUFACTURER.



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## GENERAL NOTES

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H. PLACEMENT AND CONSOLIDATION OF CONCRETE:

- 1.) NO CONCRETE SHALL BE PLACED ON ICE, SNOW, OR FROZEN FOUNDATION MATERIAL.
- 2.) THE METHOD AND MANNER OF PLACING CONCRETE SHALL BE SUCH AS TO AVOID SEGREGATION OR SEPARATION OF THE AGGREGATES OR THE DISPLACEMENT OF THE REINFORCEMENT. THE EXTERNAL SURFACE OF ALL CONCRETE SHALL BE THOROUGHLY WORKED DURING THE OPERATIONS OF PLACING IN SUCH A MANNER AS TO WORK THE MORTAR AGAINST THE FORMS TO PRODUCE A SMOOTH FINISH FREE OF HONEYCOMB AND WITH A MINIMUM OF WATER AND AIR POCKETS.
- 3.) OPEN TROUGHS AND CHUTES SHALL EXTEND AS NEARLY AS PRACTICABLE TO THE POINT OF DEPOSIT. DROPPING THE CONCRETE A DISTANCE OF MORE THAN 5’ (1.5m) OR DEPOSITING A LARGE QUANTITY AT ANY POINT AND RUNNING OR WORKING IT ALONG THE FORMS WILL NOT BE PERMITTED. THE CONCRETE FOR WALLS WITH AN AVERAGE THICKNESS OF 12 in. (300 m) OR LESS SHALL BE PLACED WITH TUBES SO THAT DROP IS NOT GREATER THAN 5’ (1.5 m).
- 4.) THE CONCRETE SHALL BE CONSOLIDATED BY INTERNAL VIBRATION, EXCEPT IN THIN SECTIONS OR INACCESSIBLE LOCATIONS WHERE CONSOLIDATION BY INTERNAL VIBRATION IS NOT PRACTICABLE.
- 5.) THE CONTRACTOR SHALL PROVIDE AND USE A SUFFICIENT NUMBER OF VIBRATORS TO ENSURE THAT CONSOLIDATION CAN BE STARTED IMMEDIATELY AFTER THE CONCRETE HAS BEEN DEPOSITED IN THE FORMS.
- 6.) THE VIBRATORS SHALL BE INSERTED INTO THE CONCRETE IMMEDIATELY AFTER IT IS DEPOSITED AND SHALL BE MOVED THROUGHOUT THE MASS SO AS TO THOROUGHLY WORK THE CONCRETE AROUND THE REINFORCEMENT, EMBEDDED FIXTURES, AND INTO THE CORNERS AND ANGLES OF THE FORMS. VIBRATORS SHALL NOT BE ATTACHED TO THE FORMS, REINFORCEMENT BARS, OR THE SURFACE OF THE CONCRETE.
- 7.) APPLICATION OF VIBRATORS SHALL BE AT POINTS UNIFORMLY SPACED AND NOT FARTHER APART THAN TWICE THE RADIUS OVER WHICH THE VIBRATION IS VISIBLY EFFECTIVE. THE DURATION OF THE VIBRATION AT THE POINTS OF INSERTION SHALL BE SUFFICIENT TO THOROUGHLY CONSOLIDATE THE CONCRETE INTO PLACE BUT SHALL NOT BE CONTINUED SO AS TO CAUSE SEGREGATION.
- 8.) CONCRETE SHALL BE PLACED IN CONTINUOUS HORIZONTAL LAYERS. WHEN IT IS NECESSARY BY REASON OF AN EMERGENCY TO PLACE LESS THAN A COMPLETE HORIZONTAL LAYER IN ONE OPERATION, SUCH LAYER SHALL TERMINATE IN A VERTICAL BULKHEAD, SEPARATE BATCHES SHALL FOLLOW EACH OTHER CLOSELY AND IN NO CASE SHALL THE INTERVAL OF TIME BETWEEN THE PLACING OF SUCCESSIVE BATCHES BE GREATER THAN 20 MINUTES.
- 9.) DO NOT ADD EXTRA MIX WATER TO THE MIX AT JOB SITE.
- 10.) PLACE CONCRETE WITHIN 90 MINUTES OF BATCHING AT THE PLANT.

I. TESTING:

- 1.) THE CONCRETE CONTRACTOR SHALL PERFORM AT LEAST 1 SLUMP TEST PER DAY, 1 EVERY MINIMUM 100 CUBIC YARDS, OR AT TIMES NOT MEETING DESIGN SPECIFICATIONS ARE SUSPECTED.
- 2.) SPECIFY THAT CONTRACTOR OR PROJECT ENGINEER OR HIS REPRESENTATIVE MAY REJECT MATERIALS DEEMED UNSUITABLE, NOT MEETING SPECIFICATIONS.
- 3.) THE CONCRETE CONTRACTOR SHALL PERFORM AT LEAST 1 BREAK TEST PER SECTION(S) OF STRUCTURE POURED.
- 4.) ALL TEST RESULTS WILL BE PROVIDED TO FWI AS SOON AS RECEIVED.

VIBRATION SPECEFICATIONS:

DIAMETER OF HEAD (inches)	RECOMENDED FREQUENCY (vibrations per minute)	AVERAGE AMPLITUDE (inches)	CENTRIFUGAL FORCE (lbs.)	RADIUS OF ACTION (inches)	RATE OF CONCRETE PLACEMENT (yds. per hr.)
1¼ – 2½	8,500–12,500	0.02–0.04	300–1000	20–32	12–45

K. REMOVAL OF FORMS:

- 1.) REMOVAL OF CONCRETE FORMS ARE SUBJECT TO THE EXERCISE OF GOOD JUDGMENT AND OBSERVATION OF THE CONCRETE WHEN STRIPPING OF THE FORMS START.
- 2.) AT A MINIMUM, OBSERVE THE FOLLOWING:

– 24 HOURS SLABS ON GRADE

– 48 HOURS WALLS AND COLUMNS

– 144 HOURS BEAMS AND SUSPENDED SLABS

– FOR FURTHER CONSTRUCTION TYPES NOT LISTED ABOVE, SEE ACI 347.

L. REPAIRS TO CONCRETE:

- 1.) ALL REPAIRS TO CONCRETE BECAUSE OF CRACKING, HONEYCOMBING, OR ANY OTHER DEFORMITY WILL BE COMPLETED ACCORDING TO: (NRCS NATIONAL ENGINEERING HANDBOOK CONSTRUCTION SPECIFICATION 31–CONCRETE FOR MAJOR TRUCTURES DATED JANUARY 2009)

M. BACKFILLING:

- 1.) ONCE THE CONCRETE IS PROPERLY CURED, BACK FILL CAN BE PLACED. AVOID BACK FILL CONTAINING LARGE ROCKS, HARD OR FROZEN SOIL LUMPS, OR CONSTRUCTION DEBRIS. BACK FILL SHOULD BE PLACED NO HIGHER THAN 12” FROM THE TOP OF THE WALL.
- 2.) DO NOT PLACE BACKFILL UNTIL PRECAST SLATS ARE PROPERLY IN PLACE.
- 3.) ADJACENT TO STRUCTURES AND PIPES WITHIN 2 FEET OF STRUCTURES OR PIPES, EARTH FILL SHALL BE PLACED IN 4–INCH LIFTS (PRIOR TO COMPACTION) IN A MANNER ADEQUATE TO PREVENT DAMAGE TO THE STRUCTURE AND TO ALLOW THE STRUCTURE OR PIPE TO GRADUALLY AND UNIFORMLY ASSUME THE BACK FILL LOADS. COMPACTION SHALL BE ACCOMPLISHED BY MEANS OF MANUALLY DIRECTED POWER TAMPERS OR PLATE VIBRATORS OR HAND TAMPING UNLESS OTHERWISE SPECIFIED. HEAVY EQUIPMENT SHALL NOT BE OPERATED WITHIN 5 FEET OF ANY STRUCTURE OR PIPE. COMPACTION BY MEANS OF DROP WEIGHTS OPERATING FROM A CRANE OR HOIST OF ANY TYPE WILL NOT BE PERMITTED.
- 4.) LENSES OR POCKETS OF UNSUITABLE SOIL SHALL BE REMOVED AND REPLACED WITH SPECIFIED MATERIALS AS DIRECTED BY THE TESTING AND INSPECTION AGENCY. THE EXTENT OR REMOVAL AND THE QUALITY OF REPLACEMENT MATERIALS WILL BE DETERMINED BY THE TESTING AND INSPECTION AGENCY.
- 5.) THE SITE SHALL BE GRADED TO PROVIDE DRAINAGE AWAY FROM THE STRUCTURE AT A MINIMUM OF 1% SLOPE.



CONCRETING IN HOT WEATHER:

A. HOT WEATHER DEFINITION:

- 1.) FOR THE PURPOSE OF THIS SPECIFICATION, HOT WEATHER IS DEFINED AS ANY COMBINATION OF HIGH TEMPERATURE, (GENERALLY ABOVE 80 DEGREES F), HIGH CONCRETE TEMPERATURE, LOW RELATIVE HUMIDITY, AND WIND VELOCITY TENDING TO IMPAIR THE QUALITY OF FRESH OR HARDENED CONCRETE OR OTHERWISE RESULTING IN ABNORMAL PROPERTIES.
- 2.) SPECIAL PROVISIONS SHALL BE MADE TO IMMEDIATELY PROTECT AND CURE THE CONCRETE DUE TO RAPID DRYING CONDITIONS. CONCRETE SURFACES SHALL NOT BE ALLOWED TO DRY AFTER PLACEMENT AND DURING THE CURING PERIOD.
- 3.) IN EXTREME CONDITIONS, IT MAY BE NECESSARY TO (1) RESTRICT PLACEMENT TO LATE AFTERNOON OR EVENING, (2) RESURRECT THE DEPTH OF LAYERS TO ASSURE COVERAGE OF THE PREVIOUS LAYER WHILE IT WILL STILL RESOUND READILY VIBRATION, (3) SUSPEND PLACEMENT UNTIL CONDITIONS IMPROVE.

B. PREPARATIONS FOR PLACING AND CURING:

- 1.) PLANING HOT WEATHER PLACEMENTS:  
UNDER HOT WEATHER CONDITIONS, SCHEDULING CONCRETE PLACEMENTS AT OTHER–THAN–NORMAL HOURS MAY BE ADVISABLE. PERTINENT CONSIDERATIONS INCLUDE EASE OF HANDLING AND PLACING, AND MINIMIZING THE RISK OF PLASTIC SHRINKAGE AND THERMAL CRACKING.
- 2.) EXPEDITING PLACEMENT:  
PREPARATIONS SHOULD BE MADE TO TRANSPORT, PLACE, CONSOLIDATE, AND FINISH THE CONCRETE AT THE FASTEST POSSIBLE RATE. CONCRETE DELIVERY TO THE JOB SHOULD BE SCHEDULED SO THAT IT IS PLACED PROMPTLY ON ARRIVAL, PARTICULARLY THE FIRST BATCH.
- 3.) PLACING EQUIPMENT:  
EQUIPMENT FOR PLACING THE CONCRETE SHOULD BE OF SUITABLE DESIGN AND HAVE AMPLE CAPACITY TO PERFORM EFFICIENTLY.
- 4.) CONSOLIDATION EQUIPMENT:  
THERE SHOULD BE AMPLE VIBRATION EQUIPMENT AND WORKERS TO CONSOLIDATE THE CONCRETE IMMEDIATELY AS IT IS RECEIVED IN THE FORM. (SEE PAGE 3 ITEM H)
- 5.) PREPARATIONS FOR PROTECTING AND CURING THE CONCRETE:  
AMPLE WATER SHOULD BE AVAILABLE AT THE PROJECT SITE FOR MOISTENING THE SUBGRADE, AS WELL AS FOR FOGGING FORMS AND REINFORCEMENT BEFORE CONCRETE PLACEMENT. FOR MOIST CURING, USE WATER WITH A TEMPERATURE NO MORE THAN 20°F (11°C) COOLER THAN THE CONCRETE TEMPERATURE TO AVOID THERMAL SHOCK.

C. PLACEMENT AND FINISHING:

- 1.) GENERAL:  
EXPEDITIOUS PLACEMENT AND FINISHING MATERIALLY REDUCES HOT WEATHER DIFFICULTIES. DELAYS INCREASE SLUMP LOSS AND INVITE THE ADDITION OF WATER OFFSETS TO OFFSET THOSE LOSSES. THE CONCRETE SHOULD NOT BE PLACED FASTER THAN IT CAN BE PROPERLY CONSOLIDATED AND FINISHED.
- 2.) PLACEMENT OF FLATWORK:  
WHEN CONCRETE IS DEPOSITED FOR FLATWORK ON THE GROUND, THE SUBGRADE SHOULD BE MOIST, BUT FREE OF STANDING WATER.

D. CURING AND PROTECTION:

- 1.) GENERAL:  
IMMEDIATELY FOLLOWING COMPLETION OF FINISHING OPERATIONS, EFFORTS SHOULD BE MADE TO PROTECT THE CONCRETE FROM LOW HUMIDITY, DRYING WINDS, AND EXTREME AMBIENT TEMPERATURE DIFFERENTIAL. WHENEVER POSSIBLE, THE CONCRETE AND SURROUNDING FORMWORK SHOULD BE KEPT IN A UNIFORM MOISTURE AND TEMPERATURE CONDITION TO ALLOW THE CONCRETE TO DEVELOP ITS MAXIMUM POTENTIAL STRENGTH AND DURABILITY. PROCEDURES FOR KEEPING EXPOSED SURFACES FROM DRYING SHOULD BEGIN PROMPTLY AND CONTINUE WITHOUT INTERRUPTION. FAILURE TO DO SO CAN RESULT IN EXCESSIVE DRYING SHRINKAGE AND RELATED CRACKING. AN APPROVED CURING METHOD SHOULD BE CONTINUED FOR AT LEAST 7 DAYS. IN ADDITION, CONCRETE SURFACES SHOULD NOT BE ALLOWED TO BECOME SURFACE–DRY AT ANY POINT DURING THE TRANSITION. CONCRETE SHOULD ALSO BE PROTECTED AGAINST THERMAL SHRINKAGE CRACKING DUE TO RAPID TEMPERATURE DROPS, PARTICULARLY DURING THE FIRST 24 HOURS. THERMAL SHRINKAGE CRACKING IS ASSOCIATED WITH A COOLING RATE OF MORE THAN 5°F (3°C) PER HOUR, OR MORE THAN 50°F (28°C) IN A 24 HOUR PERIOD FOR CONCRETE WITH A LEAST DIMENSION LESS THAN 12 IN. HOT WEATHER PATTERNS INCREASE THE POTENTIAL FOR THERMAL CRACKING DUE TO VAST DAY AND NIGHT TEMPERATURE DIFFERENCES.
- 2.) MOIST CURING OF FLATWORK:  
A COMMON PRACTICAL METHOD OF MOIST CURING IS TO COVER THE CONCRETE WITH IMPERVIOUS SHEETING OR FABRIC MATS KEPT CONTINUOUSLY WET WITH A SOAKER HOSE OR SIMILAR MEANS. THE TEMPERATURE OF WATER USED FOR INITIAL CURING SHOULD BE AS CLOSE AS POSSIBLE TO THAT OF THE CONCRETE TO AVOID THERMAL SHOCK.
- 3.) MEMBRANE CURING OF FLATWORK:  
CONCRETE SURFACES EXPOSED TO DIRECT SUNLIGHT SHOULD USE HEAT–REFLECTING, WHITE–PIGMENTED COMPOUNDS WHERE APPLICABLE. FOR USE IN HOT WEATHER CONDITIONS, A MATERIAL SHOULD BE SELECTED THAT ENSURES EQUAL OR GREATER MOISTURE RETENTION THAN REQUIRED BY ASTM C309. APPLICATION OF AN APPROVED MOISTURE–RETENTIVE MATERIAL SHOULD IMMEDIATELY FOLLOW THE DISAPPEARANCE OF SURFACE WATER SHEEN AFTER THE FINAL FINISHING PASS. MOST CURRYING COMPOUNDS SHOULD NOT BE USED ON ANY SURFACE AGAINST WHICH ADDITIONAL CONCRETE OR OTHER MATERIALS ARE TO BE BONDED.

CONCRETING IN COLD WEATHER:

A. COLD WEATHER DEFINITION:

- 1.) WHEN AIR TEMPERATURE HAS FALLEN TO, OR IS EXPECTED TO FALL BELOW, 40°F (4°C) DURING THE PROTECTION PERIOD; PROTECTION PERIOD IS DEFINED AS THE TIME REQUIRED TO PREVENT CONCRETE FROM BEING AFFECTED BY EXPOSURE TO COLD WEATHER.
- 2.) WHEN THE MINIMUM DAILY ATMOSPHERIC TEMPERATURE IS LESS THAN 40 DEGREES F, CONCRETE SHALL BE INSULATED OR HOUSED AND HEATED IMMEDIATELY AFTER PLACEMENT. THE TEMPERATURE OF THE CONCRETE AND AIR ADJACENT TO THE CONCRETE SHALL BE MAINTAINED AT NO LESS THAN 50 DEGREES F NOR MORE THAN 90 DEGREES F FOR THE DURATION OF THE CURING PERIOD.
- 3.) THE CURING PERIOD MAY BE REDUCED TO 3 DAYS WHEN TYPE III CEMENT IS USED. AN ADDITIONAL 100 POUNDS OF TYPE I CEMENT AND A MAXIMUM OF 6 GALLONS OF ADDED WATER PER CUBIC YARD MAY BE USED IN LIEU OF TYPE III CEMENT.
- 4.) COMBUSTION HEATERS SHALL HAVE EXHAUST FLUE GASES VENTED OUT OF THE CONCRETE PROTECTION ENCLOSURE AND SHALL NOT BE PERMITTED TO DRY THE CONCRETE.

B. OBJECTIVES PRINCIPLES, AND PLANNING:

- 1.) OBJECTIVES:  
–PREVENT DAMAGE TO CONCRETE DUE TO EARLY AGE FREEZING. AT 50°F (10°C), MOST WELL–PROPORTIONED CONCRETE MIXTURES REACH A COMPRESSIVE STRENGTH OF 500 psi WITHIN 48 HOURS.  
–ENSURE THAT THE CONCRETE DEVELOPS THE REQUIRED STRENGTH FOR SAFE REMOVAL OF FORMS, SHORES AND RESHORES, AND FOR SAFE LOADING OF THE STRUCTURE DURING AND AFTER CONSTRUCTION.
- 2.) PRINCIPLES:  
CONCRETE PROTECTED FROM FREEZING UNTIL IT ATTAINS A COMPRESSIVE STRENGTH OF 500 psi WILL NOT BE DAMAGED BY EXPOSURE TO A SINGLE FREEZING CYCLE (POWERS 1962).
- 3.) PLANNING:  
PLANS TO PROTECT FRESH CONCRETE FROM FREEZING AND TO MAINTAIN TEMPERATURES ABOVE THE RECOMMENDED MINIMUM VALUES SHOULD BE MADE WELL BEFORE FREEZING ARE EXPECTED TO OCCUR. EQUIPMENT AND MATERIALS SHOULD BE AT THE WORK SITE BEFORE COLD WEATHER IS LIKELY TO OCCUR, NOT AFTER CONCRETE IS PLACED AND ITS TEMPERATURE APPROACHES THE FREEZING POINT.
- 4.) SUBGRADE CONDITION:  
CONCRETE SHOULD NOT BE PLACED ON FROZEN SUBGRADE. REMOVE ALL FROST BEFORE PLACING THE CONCRETE AND RECOMPACT THAWED SOIL DISTURBED BY FROST. PLACEMENT OF INSULATION OVER THE SUBGRADE, OR PROVISION OF HEAT, IS REQUIRED TO REMOVE ANY FROST IN THE SOIL AND RAISE THE SUBGRADE TEMPERATURE ABOVE 32°F. WHEN THE CONCRETE TEMPERATURE IS MORE THAN 10°F COOLER OR 5°F WARMER THAN THE SUBGRADE, DIFFERENTIAL RATES OF SETTING BETWEEN THE TOP AND BOTTOM OF THE SLAB MAY RESULT IN VARIOUS SURFACE DEFECTS INCLUDING PLASTIC SHRINKAGE CRACKING, BLISTERING, AND DELAMINATIONS.

C. TEMPERATURE DROP AFTER REMOVAL OF PROTECTION:

- 1.) AT THE END OF THE PROTECTION PERIOD, CONCRETE SHOULD BE COOLED GRADUALLY TO REDUCE CRACK–INDUCING DIFFERENTIAL STRAINS BETWEEN THE INTERIOR AND EXTERIOR OF THE STRUCTURE. THE TEMPERATURE DROP OF CONCRETE SURFACES SHOULD NOT EXCEED THE RATES INDICATED IN TABLE 1.

D. EQUIPMENT, MATERIALS, AND METHODS OF TEMPERATURE PROTECTION:

- 1.) INTRODUCTION:  
THE TEMPERATURE OF CONCRETE PLACED DURING COLD WEATHER SHOULD BE MAINTAINED AS CLOSE AS POSSIBLE TO THE RECOMMENDED TEMPERATURES IN LINE 1 OF TABLE 1 AND FOR THE LENGTHS OF TIME RECOMMENDED IN TABLE 2 UNTIL THE IN–PLACE STRENGTH HAS REACHED A PREVIOUSLY ESTABLISHED TARGET VALUE.
- 2.) INSULATING MATERIALS:  
HEAT OF HYDRATION IS RETAINED BY USING INSULATING BLANKETS ON UNFORMED SURFACES AND BY USING INSULATING FORMS. TO BE EFFECTIVE, KEEP INSULATION IN CLOSE CONTACT WITH THE CONCRETE OR THE FORM SURFACE.

TABLE 1 RECOMMENDED CONCRETE TEMPERATURES

LINE	AIR TEMPERATURE	SECTION SIZE MINIMUM >72 in.(1800 mm)
1	–	40°F(5°C)
2	ABOVE 30°F(–1°C)	45°F(7°C)
3	0°–30°F(–18°to–1°C)	50°F(10°C)
4	BELOW 0°F(–18°C)	55°F(13°C)
5	–	20°F(11°C)

TABLE 2 LENGTH OF PROTECTION PERIOD FOR CONCRETE PLACED DURING COLD WEATHER

LINE	SERVICE CONDITION	PROTECTION PERIOD AT MINIMUM TEMPERATURE INDICATED IN LINE 1 OF TABLE 5.1, DAYS* (NORMAL SET CONCRETE)
1	NO LOAD, NOT EXPOSED	2
2	NO LOAD, EXPOSED	3
3	PARTIAL LOAD, EXPOSED	6
4	FULL LOAD	–

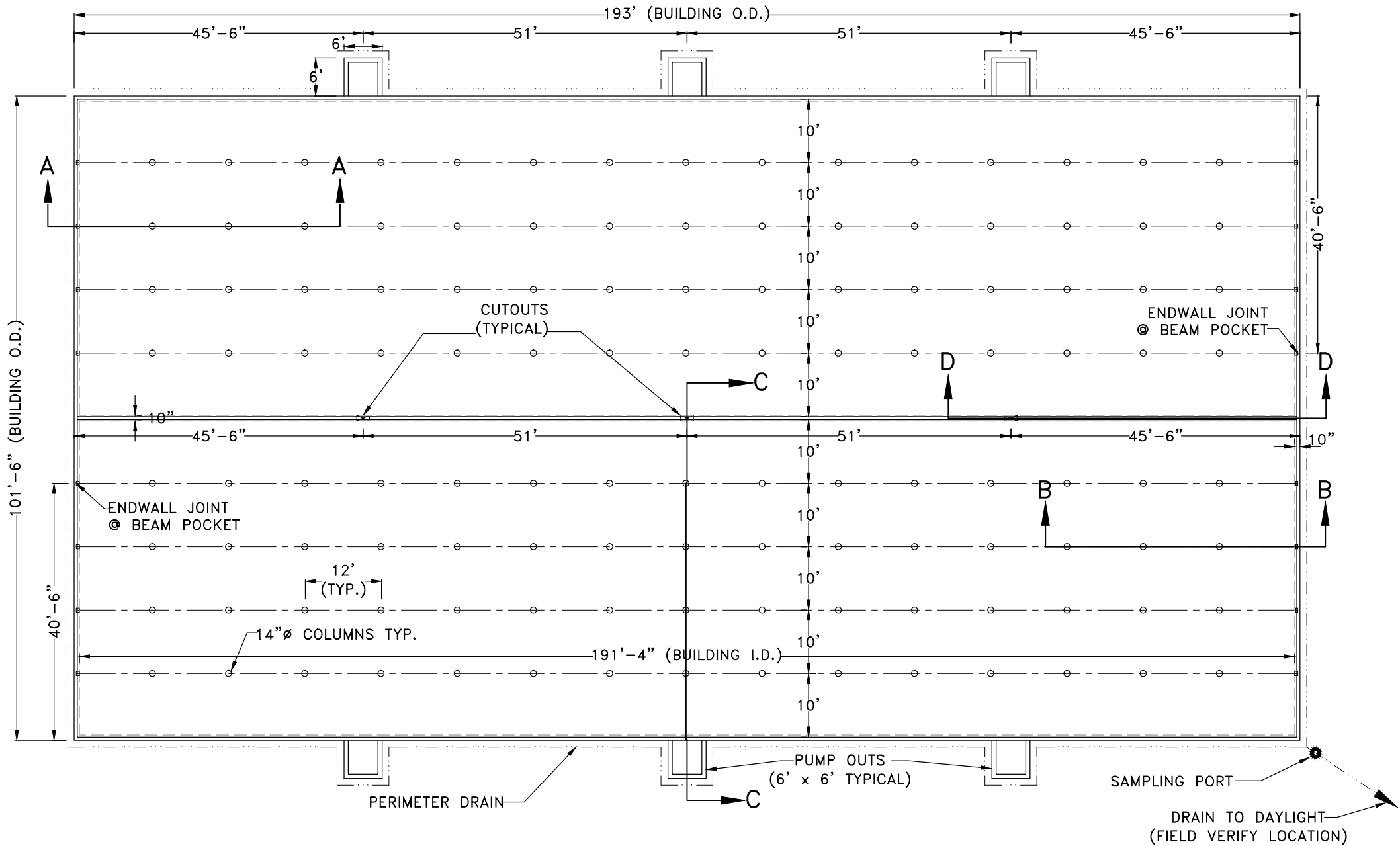
\*A DAY IS A 24 HOUR PERIOD.





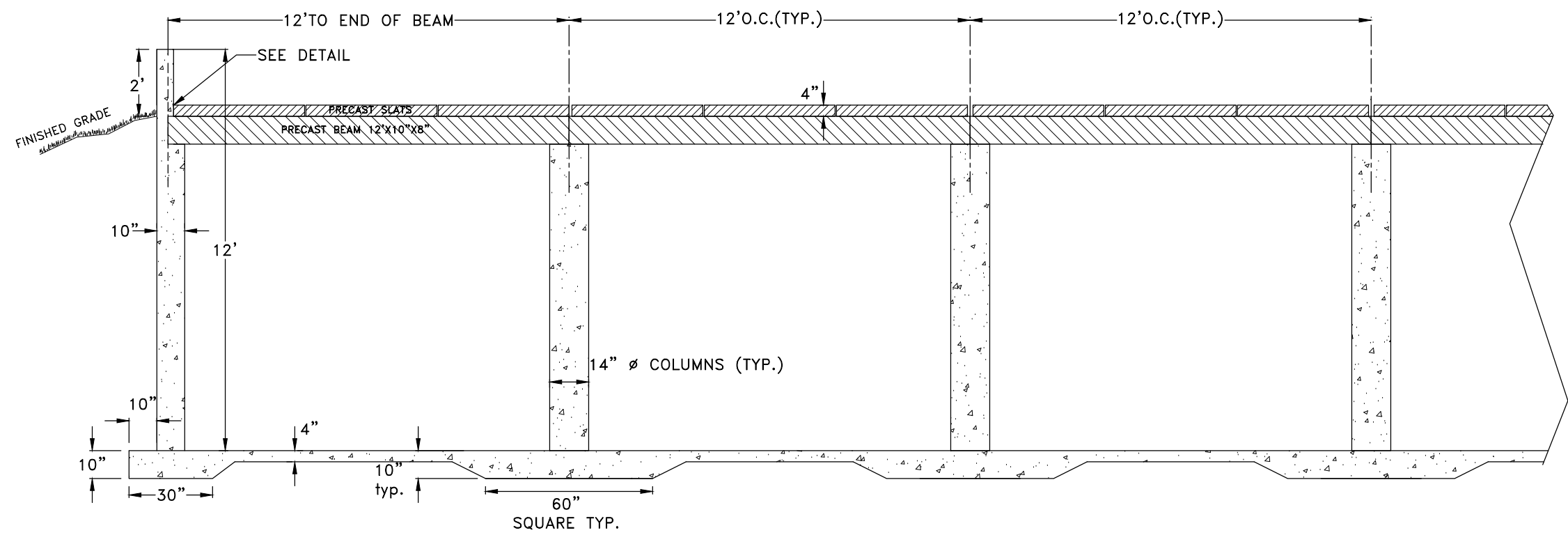
GENERAL NOTES

- 1.) ANY REVISIONS TO THESE DRAWINGS MUST BE APPROVED BY THE PROJECT ENGINEER OF THE COMPANY LISTED IN THE TITLE BLOCK.
- 2.) CONCRETE CONSTRUCTION SHALL MEET WITH MIDWEST PLAN SERVICE-36, CONCRETE MANURE STORAGES UNLESS NOTED OTHERWISE.
- 3.) NO CONCRETE SHALL BE PLACED ON ICE, SNOW OR FROZEN FOUNDATION MATERIAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONCRETE DAMAGED BY LOW TEMPERATURES AND SHALL REMOVE AND REPLACE ANY CONCRETE SO DAMAGED AT HIS/HER EXPENSE.
- 4.) THE METHOD AND MANNER OF PLACING CONCRETE SHALL BE SUCH AS TO AVOID SEGREGATION OR SEPARATION OF THE AGGREGATES OR THE DISPLACEMENT OF THE REINFORCEMENT.
- 5.) THE FOOTINGS ARE TO BE CONSTRUCTED WITH A MINIMUM OF 3,000 PSI CONCRETE.
- 6.) ALL WALLS, COLUMNS, AND FLOORS ARE TO BE CONSTRUCTED OF 4,000 PSI CONCRETE.
- 7.) CONCRETE SLATS WILL BE UTILIZED FOR FLOORING.
- 8.) THE CONCRETE PAD WILL BE A CONTINUOUS POUR.
- 9.) EXTERIOR WALL CONSTRUCTION JOINTS WILL BE INSTALLED AT 100' O.C. MAXIMUM. UNLESS OTHERWISE NOTED.
- 10.) NO VEHICLE LOADS ALLOWED WITHIN 5' OF PIT/GUTTER WALLS.
- 11.) ALL BEAMS SHALL BE BUTTED TIGHT AND/OR GROUTED TIGHT THE FULL WIDTH AND HEIGHT OF THE BEAM. GROUT WILL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,500 PSI.
- 12.) ALL SLATS SHALL BE BUTTED TIGHT AND/OR GROUTED TIGHT THE FULL LENGTH AND DEPTH OF THE SLAT. GROUT WILL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,500 PSI.
- 13.) NO PIPE PENETRATIONS OTHER THAN THE TYPES IDENTIFIED ON THESE DRAWINGS ARE ALLOWED. ALL WALL AND FLOOR PENETRATIONS, INCLUDING PIPE PENETRATIONS MUST BE APPROVED BY THE PROJECT ENGINEER.
- 14.) THE PRESUMED SOIL BEARING CAPACITY IS 2,000 LBS./SQ. FT., BASED ON NRCS CODE 313-3 TABLE 2.
- 15.) THE DESIGN OF THIS BUILDING IS BASED ON THE 2,000 LBS./SQ. FT. SOIL BEARING.
- 16.) WATERSTOP SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER INSTRUCTIONS.

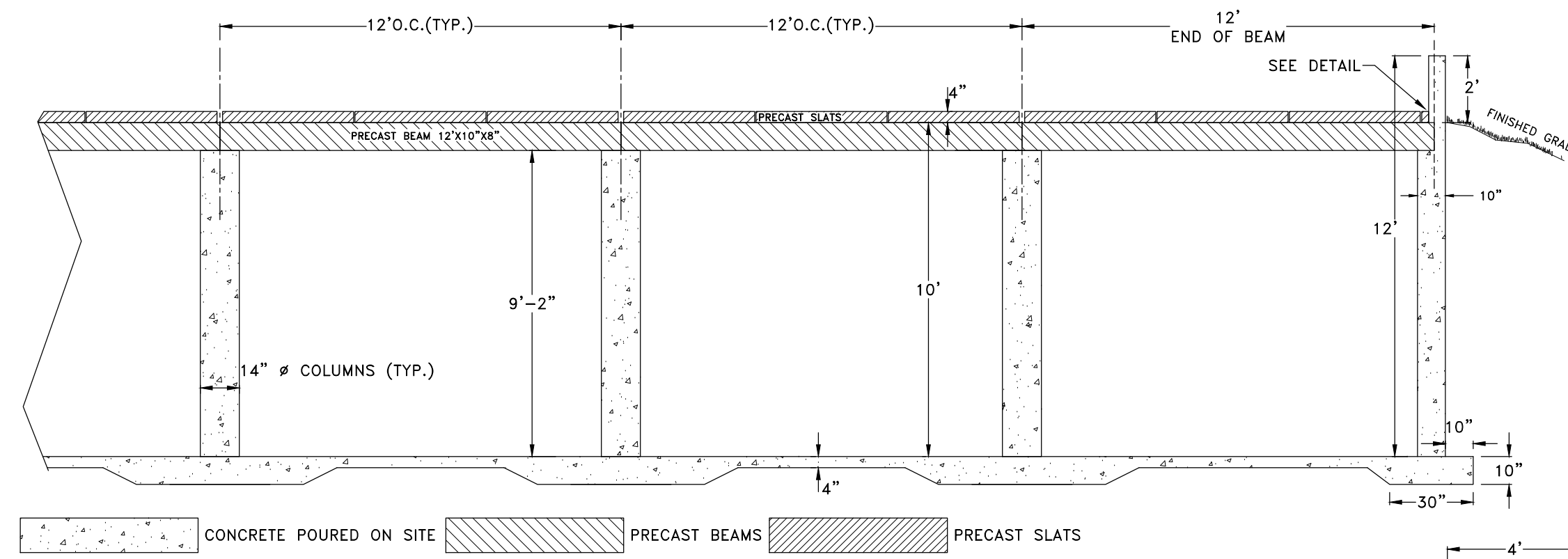




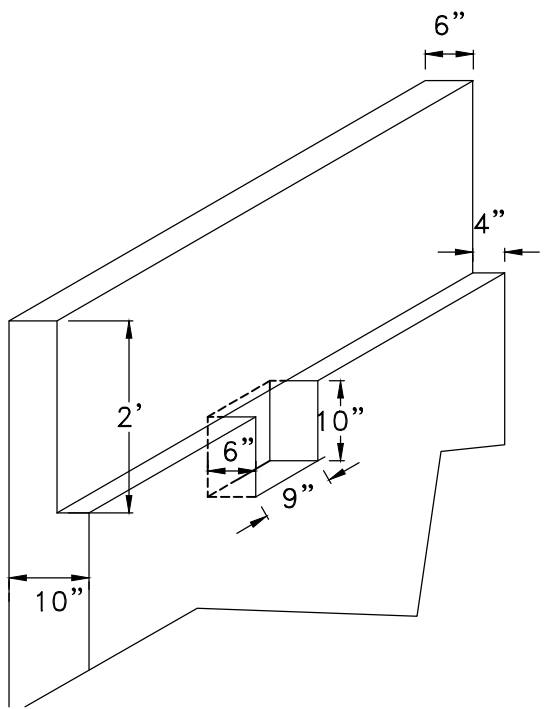
CROSS SECTION A-A



CROSS SECTION B-B

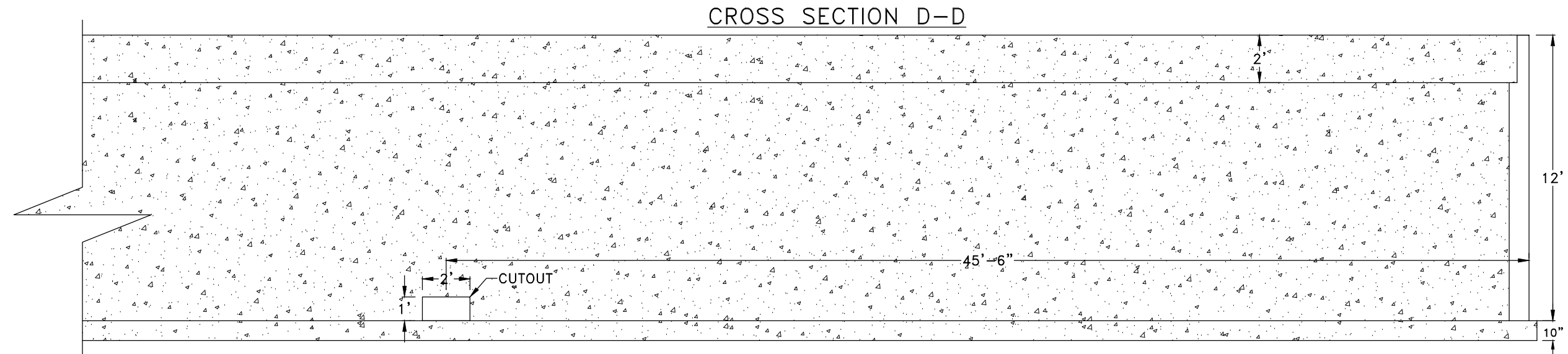
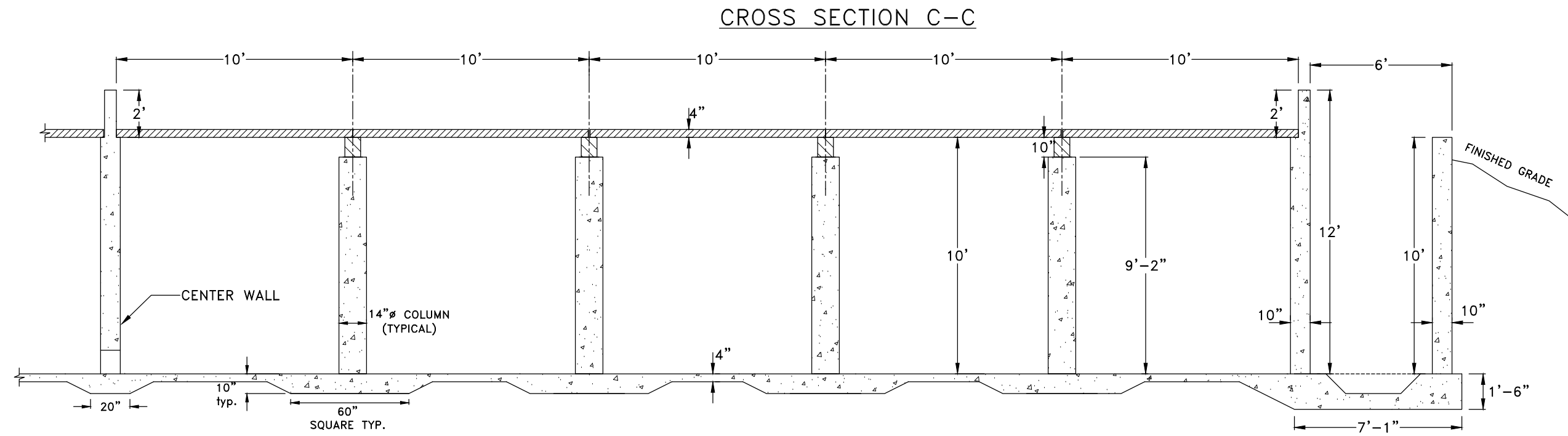



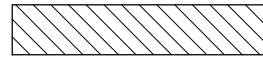

TYPICAL BEAM POCKET DETAIL  
NO SCALE

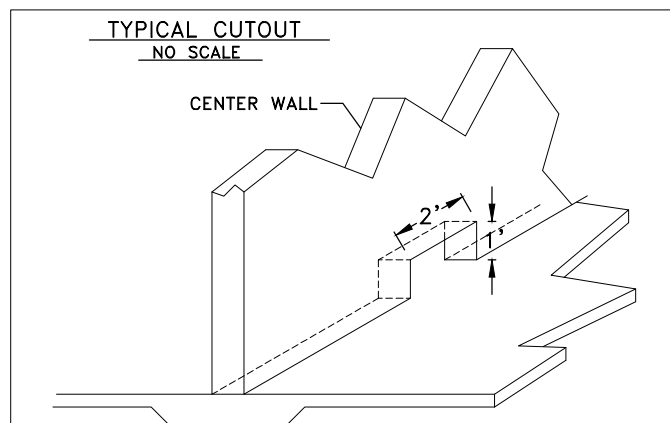


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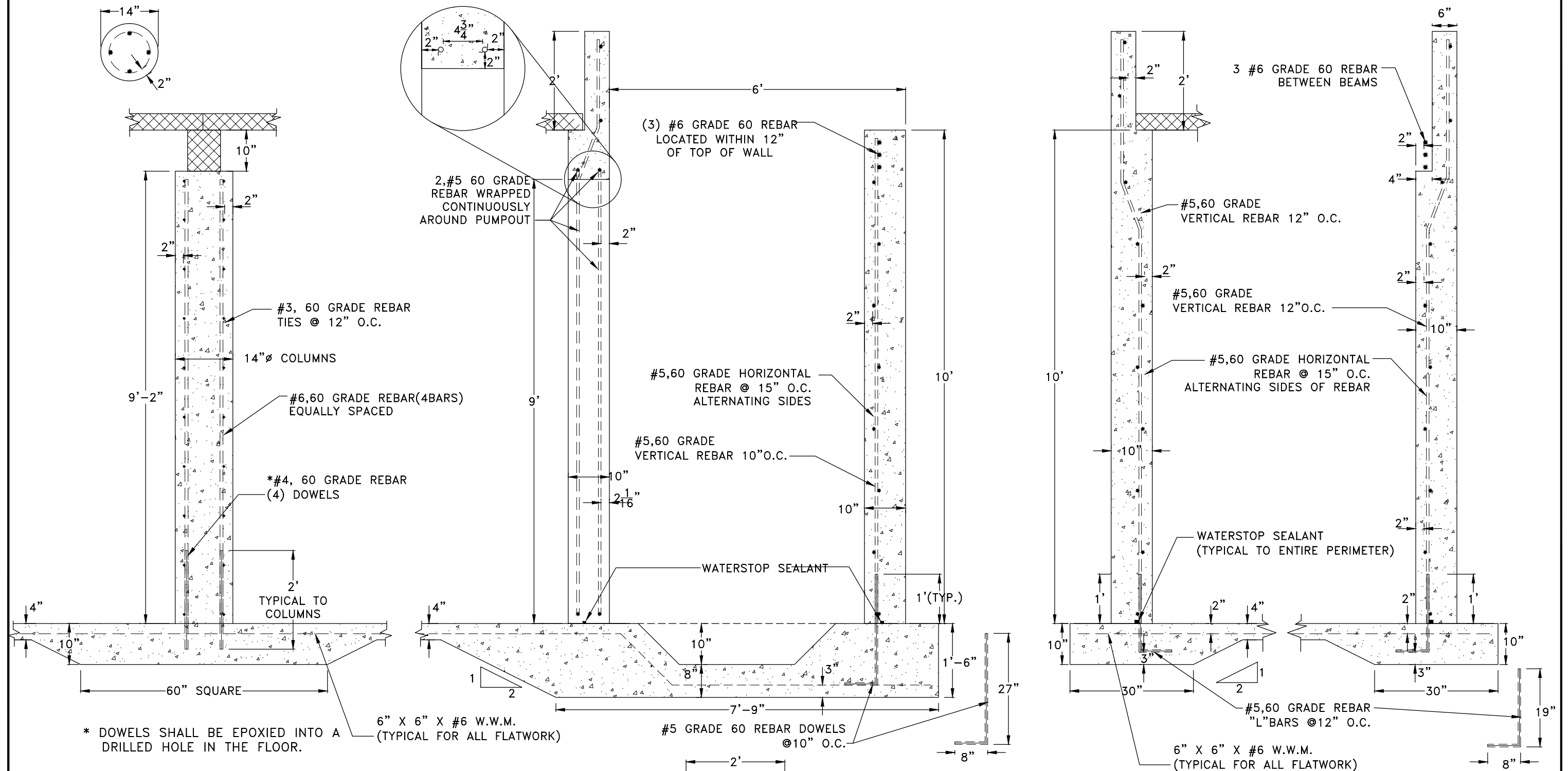




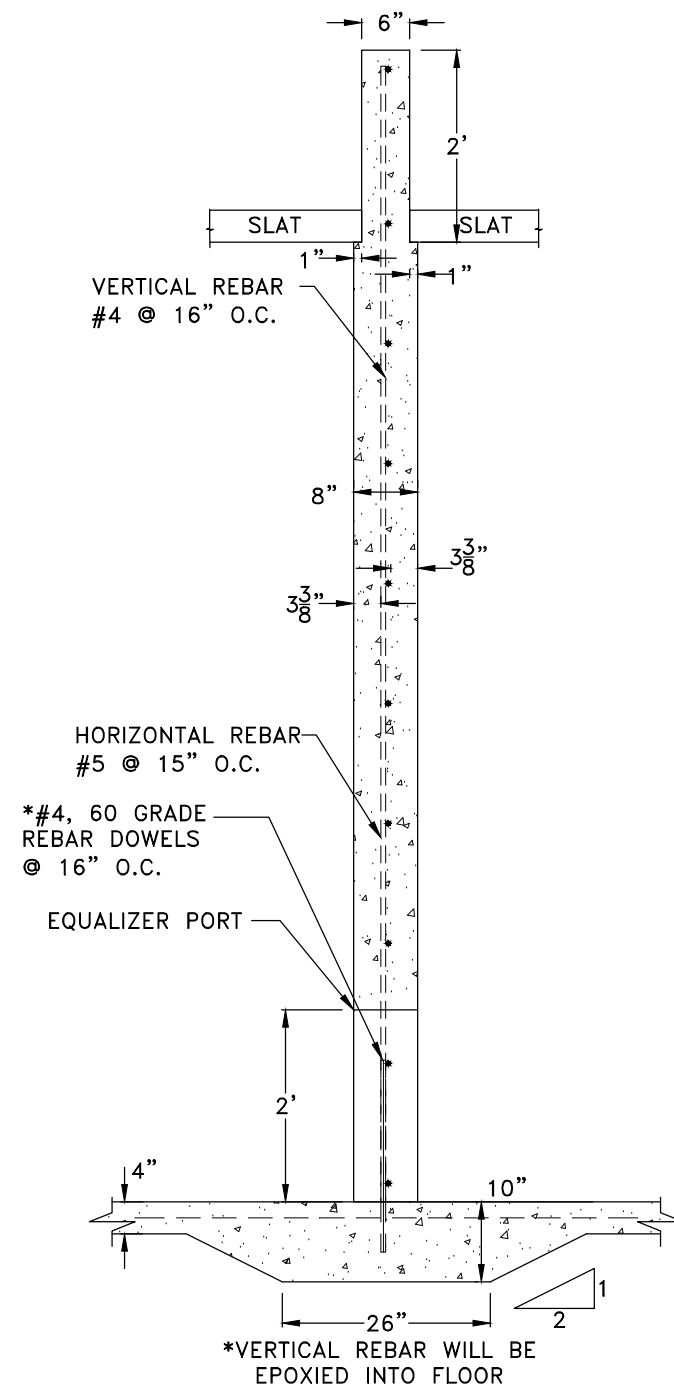
-  PRECAST SLATS
-  PRECAST BEAMS
-  CONCRETE POURED ON SITE



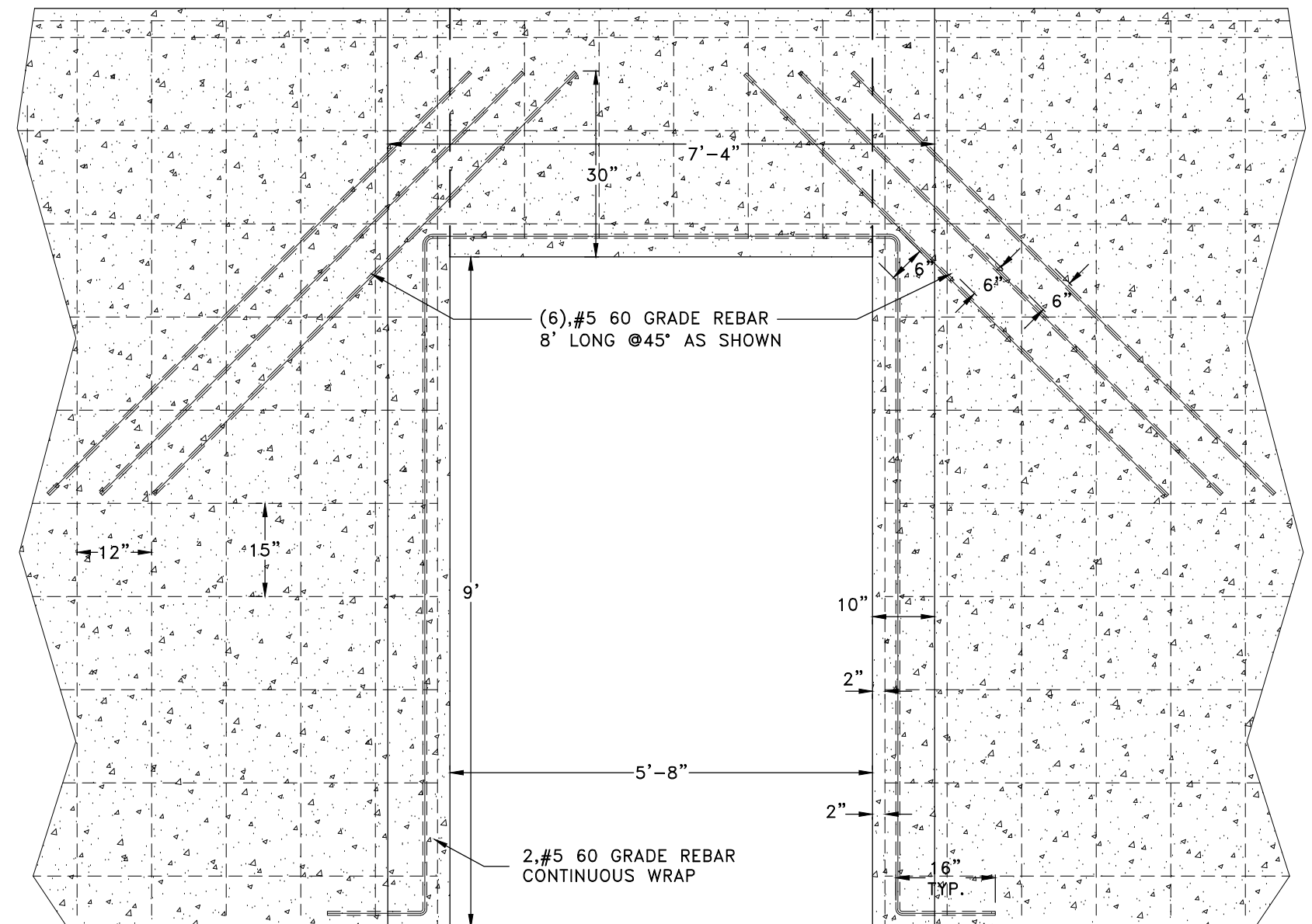


**6' X 6' PUMPOUT DETAIL****COLUMN DETAIL**





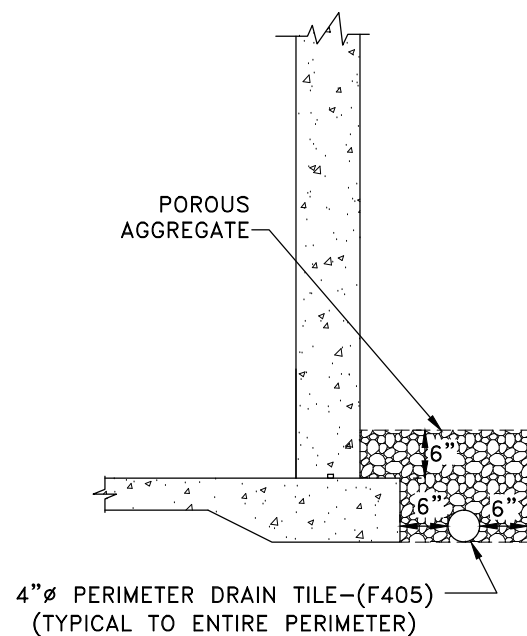
PUMPOUT OPENING DETAIL



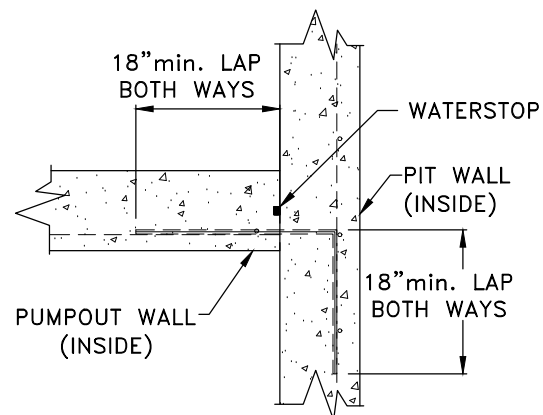
2'



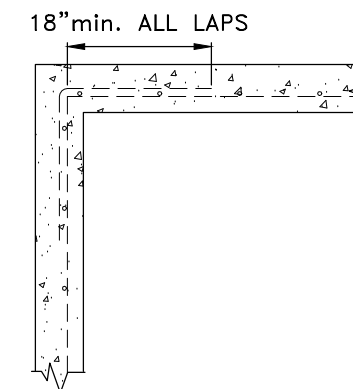
# FOUNDATION DRAIN DETAIL



# PUMPOUT TIE-IN PLAN VIEW

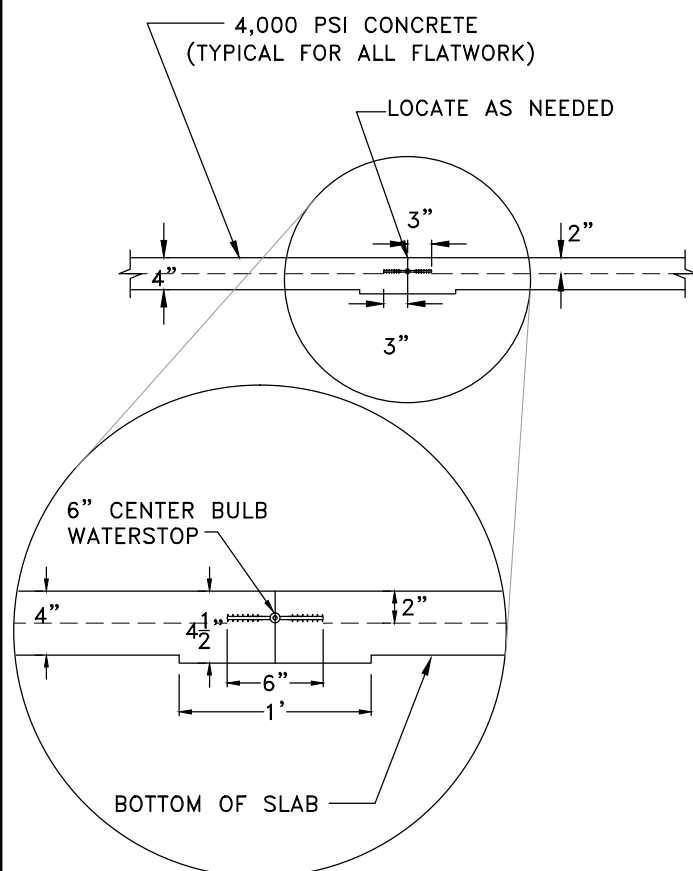


# CORNER TIE-IN

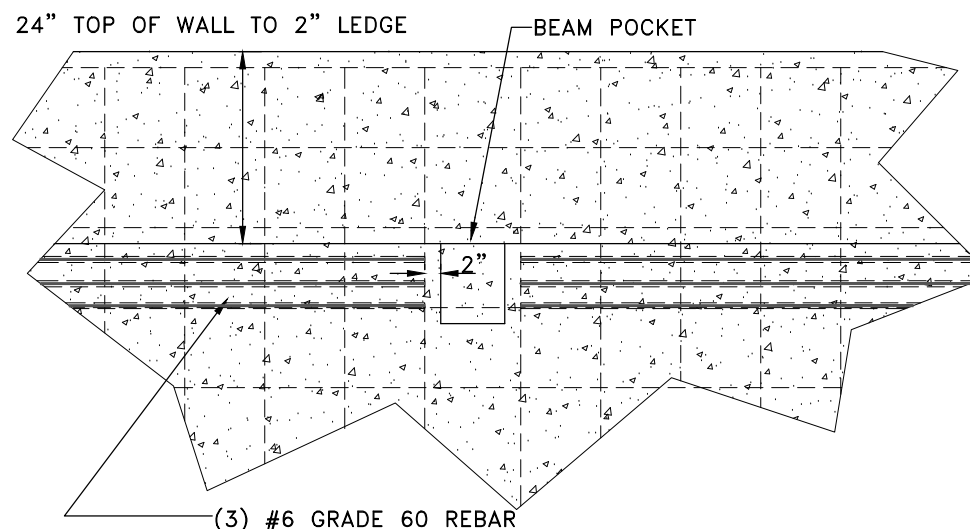


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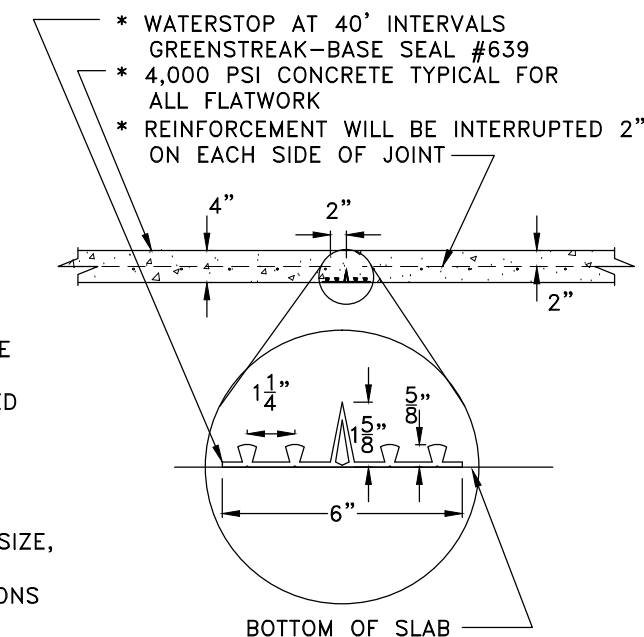
# FLOOR CONSTRUCTION JOINT



# REINFORCEMENT DETAIL AT BEAM POCKET



# FLOOR CONTROL JOINT



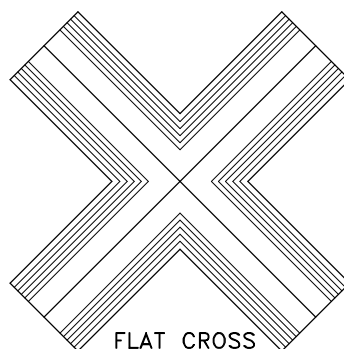
# BASE SEAL & CENTER BULB WATERSTOP WELD DETAIL

(NO SCALE)

-APPLIES TO NO OTHER WATERSTOP TYPES

## SPLICE FABRICATION:

- 1.) PROVIDE FACTORY FABRICATED WATERSTOP CORNERS AND TRANSITIONS LEAVING ONLY STRAIGHT BUTT JOINT SPLICES FOR FIELD FABRICATION, UNLESS SPECIFICALLY APPROVED IN WRITING BY THE MANUFACTURER AND PERFORMED IN ACCORDANCE WITH THEIR SPECIFICATIONS.
- 2.) USE ONLY A SPLICING IRON SPECIFICALLY RECOMMENDED BY THE MANUFACTURER FOR HEAT FUSED WELDING OF ALL SPLICES.
- 3.) WELDS ARE TO EXHIBIT A CONTINUOUS BEAD OF EXCESS MELTED MATERIAL, FREE OF DEFECTS.
- 4.) SPLICES ARE TO BE HEAT WELDED WITH THE CENTER BULB AND RIBS ALIGNED.
- 5.) ADHESIVES, SOLVENTS, LAP JOINTS, AND EDGE WELDING ARE NOT ACCEPTABLE.
- 6.) EMBEDDED WATERSTOPS MAY NOT BE WELDED OR JOINED TO OTHER WATERSTOPS OF DIFFERENT SIZE, CONFIGURATION, OR MATERIAL.
- 7.) ALL SPLICE FABRICATIONS SHALL BE PERFORMED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS



2'



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**Nonresponsive**

DETAIL SHEET #3

DRAWN BY: CEO

SCALE: AS SHOWN

DATE: 02/24/21

REVISED ON: XX/XX/XX

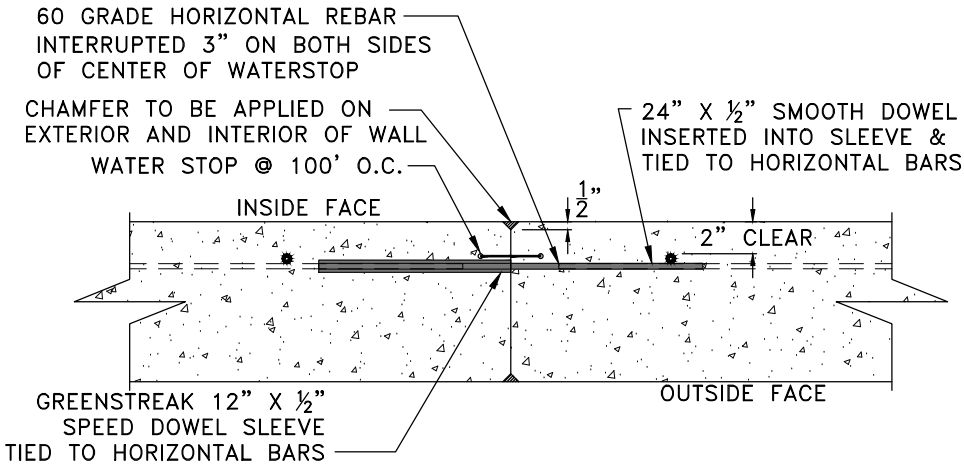
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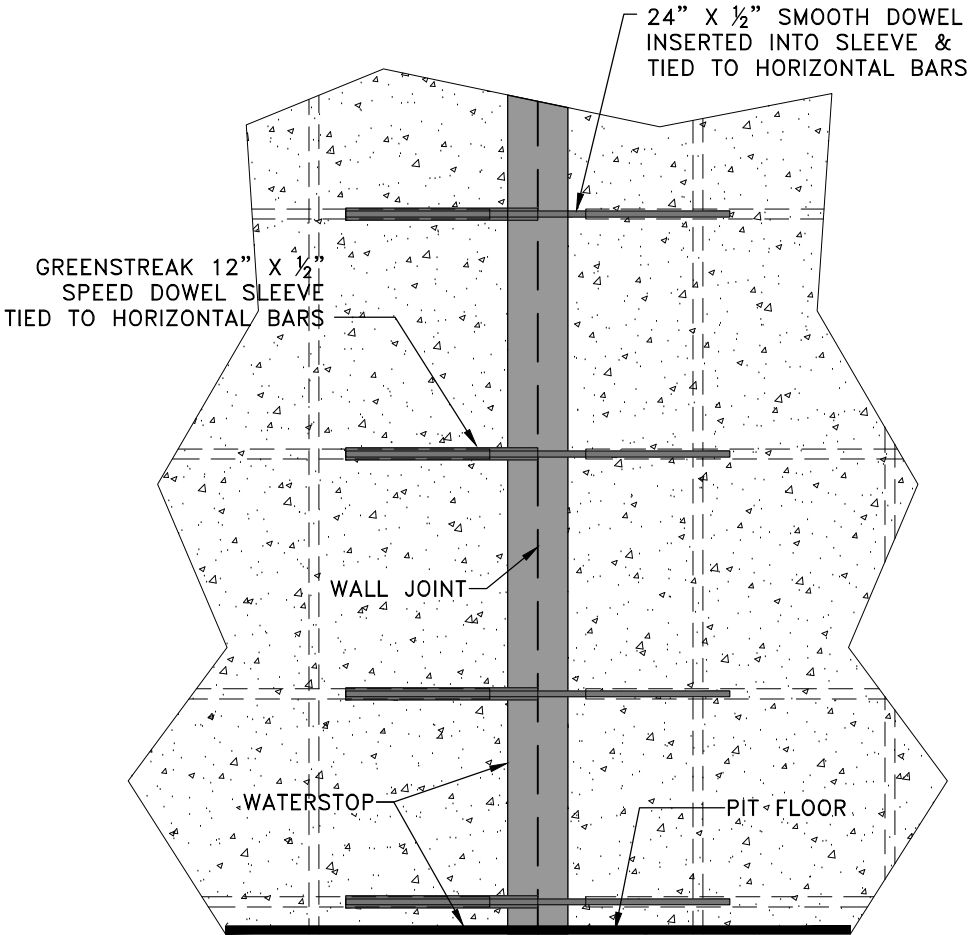
SIDEWALL JOINT TOP VIEW

(NO SCALE)



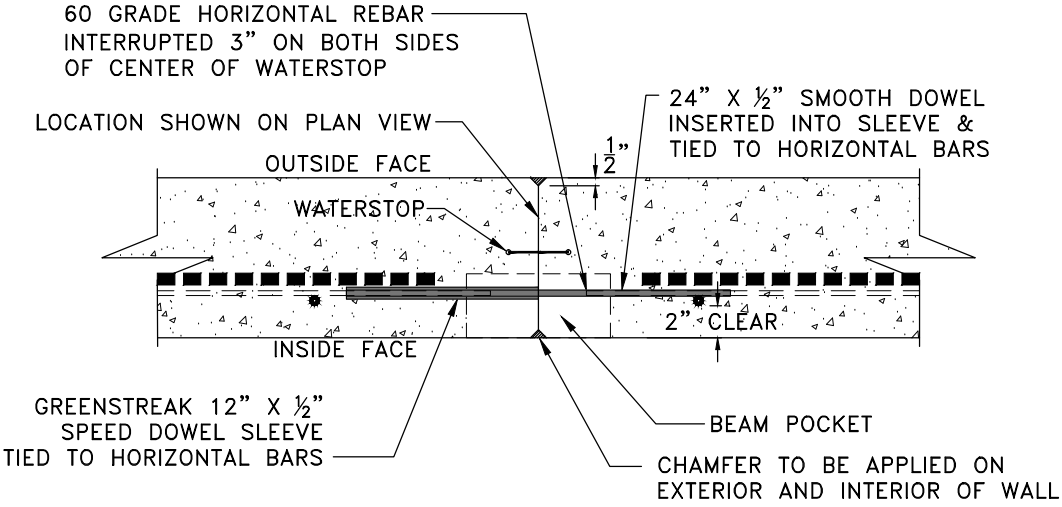
SIDEWALL JOINT SIDE VIEW

(NO SCALE)



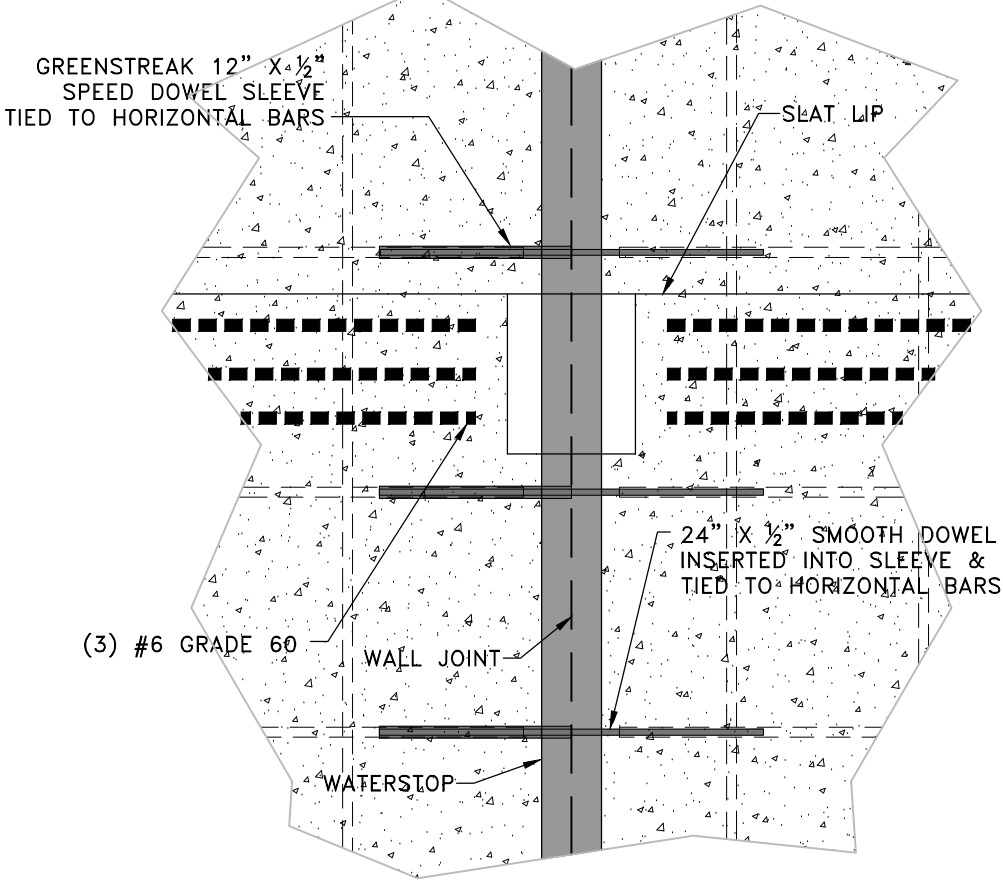
ENDWALL JOINT TOP VIEW

(NO SCALE)



ENDWALL JOINT SIDE VIEW

(NO SCALE)



2'